Changing times: Migrants' social network analysis and the challenges of longitudinal research

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A B S T R A C T

Focusing on migrant social networks, this paper draws upon the sociology of time to incorporate complex notions of temporality into the research process. In so doing, we consider firstly, the challenge of going 'beyond the snapshot' in data collection to capture dynamism through time. Secondly, we apply the concepts of timescapes to explore ways of addressing the wider context and the interplay between spatiality, temporality and relationality in migration research. We argue that integrating a mixed methods approach to SNA, crucially including visualisation, can provide a useful methodological and analytical framework to understand dynamics.

SNA can also be helpful in bridging the personal and structural dimensions in migration research, by providing a meso level of analysis. However, it is also important to connect the investigation of local and transnational networks with an analysis of the broader social, economic and political contexts in which these take shape; in other words, connecting the micro and the meso with the wider macro level. Drawing upon reflections from our migration research studies, we argue that different combinations of quantitative, qualitative and visual methods do not just provide richer sets of data and insights, but can allow us to better connect conceptualisations – and ontologies – of social networks with specific methodological frameworks.

1. Introduction

Migrants are constantly building new ties in new places as well as negotiating existing long distance ties (Lubbers et al., 2010; Bilecen and Sienkiewicz, 2015). In this respect, SNA can be useful in challenging assumptions of deterritoriality – showing not only that place still matters, (Easthope, 2009) but also how relationships are developed and sustained in specific places as well as between geographically dispersed places (Ryan, 2015a). Thus, an SNA approach can help to interrogate the 'death of distance' discourse by analysing the impact of distance and physical separation on how social ties are weakened or maintained over time (Ryan and Mulholland, 2014) and how their content and meaning – as well as their practical use – can change. SNA can also be helpful in bridging the personal and structural dimensions in migration research, by providing a meso level of analysis. However, it is also important to connect the investigation of local and transnational networks with

an analysis of the broader social, economic and political contexts in which these take shape; in other words, connecting the micro and the meso with the macro level.

Although SNA has been growing exponentially across a range of disciplines (Conway, 2014: 102), surprisingly this approach has not been widely used by migration scholars (Ryan, 2011). Only in recent years have migration researchers begun to use SNA systematically (Bilecen, 2013: 3). As discussed elsewhere in this special issue (Bilecen, Gamper and Lubbers forthcoming) the specificities of migration pose not only challenges, but also opportunities for network researchers (Ryan, 2011; D'Angelo and Ryan, 2015). Migration scholars tend often to use network concepts in a vague, descriptive way, often drawing on Putnam's framework of bonding and bridging capital but without any detailed engagement with wider SNA tools and concepts (Ryan, 2011). In recent years, however, there have been several emerging examples of how SNA could be usefully applied to researching migrant networks (Molina et al., 2015).

Highlighting limitations with some current approaches to researching social networks, we examine the advantages, but also difficulties, of using mixed methods (including visualisations) to explore the structure and meaning of migrant networks and how these evolve over time. Focusing on the sociological discussions

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of time (Adam, 2000), we consider how temporality can be adequately addressed when researching changing social relationships. Adopting a mixed methods approach to SNA may help to capture complex interactions and explore not just patterns of change, but also reasons and meanings behind temporal and spatial dynamics. Applying a reflexive framework, we draw upon examples from our longitudinal, mixed-methods research projects to consider the opportunities and challenges of researching change in migrants' social networks through time and place.

We have been researching migrant networks for over a decade and have amassed a significant body of work on processes of building new relationships in new places (Ryan et al., 2008), sustaining long distance ties (Ryan et al., 2015), networking in a business context (Ryan and Mulholland, 2014), the whole networks of migrant organisations (D'Angelo, 2008, 2015), the challenges of researching migrant networks through time (D'Angelo and Ryan, 2016). Case studies discussed in this paper illustrate the usefulness of mixed methods: firstly, in understanding the meanings behind certain network structures; secondly in going beyond 'snapshots' to analyse the complexity of temporality; and thirdly to appreciate the role of wider contextual factors in shaping both ego and whole networks. Hence, we argue that different combinations of quantitative, qualitative and visual methods do not just provide richer sets of data and insights, but can allow us to better connect conceptualisations – and ontologies – of social networks with specific methodological frameworks.

The paper proceeds through five sections. The first three are largely conceptual and discuss methodological challenges of researching temporal dynamism of social relationships. The following two sections draw on our research to explore, and reflect upon methodological opportunities in researching migration using mixed SNA. The conclusion discusses the possible contribution of the sociology of time to the study of migrants' dynamic networks.

2. Temporality, dynamism and longitudinal research

Amid on-going discussions about 'crises' in empirical sociology (Savage and Burrows, 2007; McKie and Ryan, 2016; Ryan et al., 2016), it is necessary for social researchers to critically reflect upon how they collect and analyse different kinds of data. An abiding challenge is the notion of 'time' and how sociologists can adequately include temporality and dynamism within research projects. Over recent decades much has been written about time with significant contributions from scholars such as Giddens, Saldana, to name a few. In his influential structuration theory, Giddens argues: 'An adequate account of human agency must situate action in time and space as a continuous flow of conduct' (1979: 2) and 'grasp the time–space relations inherent in the constitution of all social interaction' Giddens (1979: 3).

Despite the influence of authors like Giddens, 'many theorists find it difficult to maintain the temporal gaze' (Adam, 2000:126). Adam argues that when time is included in social studies it tends to be regarded simply as 'the neutral medium in which events take place' (2000: 126). Thus, time becomes 'commodified', 'decontextualized' and reduced to the 'empty time of calendars and clocks' (Adam, 2000:126). However, 'our experience of time rarely if ever coincides with what the clock tells us' (Melucci, 1996 cited in McKie et al., 2002: 904). Adam points to the challenge of 'taking time seriously' (2000: 126). Time needs to be seen as 'social', assuming its 'neutrality' is problematic and limits our understanding of its complexity. Thus, Saldaña (2003) highlights the importance of looking at the social construction of time in specific socio-structural contexts. While many social scientists acknowledge the importance of time-space relations, 'the major difficulty is to retain the complexity of time-space at both the levels of the theoretical and the empirical' (McKie et al., 2002: 907).

To address this challenge, Adam suggests the use of 'timescapes' to encompass quantitative time, the connections between space and time, and the multidimensionality of time experienced at different levels (Adam, 2000). The theoretical innovation of timescapes involves the combination of micro (biographical), meso (generational) and macro (historical) dimensions of time in order to understand 'dynamic relationships between individual and collective lives and broader patterns of social change' (Neale et al., 2012: 5). This concept provides a new way of thinking about and researching social processes and change, offering new tools to undertake longitudinal research (Neale et al., 2012).

Adam's approach strikes us as particularly appropriate for analysing migration processes and migrants' social lives, allowing researchers to bring together the global social, political and economic drivers of migration (macro), the lived experiences and actions of individual migrants (micro), and the societal and community contexts and dynamics where migration takes place (meso). The interconnections between these levels allow us to understand change and the factors driving change; as well as how the passing of time is experienced, internalised and presented by migrants and migrant groups.

The challenge, however, is not just to collect data over time, but to triangulate rich and multidimensional data which can reflect interrelated aspects of timescapes, for example blending qualitative insights into micro experiences with wider macro dimensions analysed through quantitative data. To date, longitudinal research remains dominated – for historical and practical reasons – by large statistical surveys (Neale et al., 2012). With regard to migration studies, time series from population statistics are still widely used to look at migration trends, and panel surveys (Black et al., 2003) are used to examine the changing socio-demographic profiles or even the changing psychological attitudes (Nowok et al., 2013) of migrants over the years. These quantitative approaches can be effective in describing changes, but are not equally effective in exploring causes of change and the interconnections between different levels of analysis. In some cases quantitative longitudinal data is used – e.g. through cluster-analysis – to identify 'typologies' of migrants, thus better capturing the sheer diversity of migrants' life trajectories (Garip, 2012); but this is still insufficient to delve into the individualised experiences of migrants, including their experience of change through time in personal and community networks.

Recent years, however, have seen a growing interest in qualitative longitudinal research (QLR), as part of a broader 'temporal turn in the social sciences' (Thomson and McLeod, 2015: 244). QLR is distinguished by the deliberate way in which 'temporality is designed into the research process making change a central focus of analytical attention' (Corden and Millar, 2007: 585). However, in so doing it is necessary not only to acknowledge the complex and constructed nature of time but also the challenges of capturing change. This raises methodological as well as epistemological issues. For example, the ways in which participants talk about the past and future is shaped by 'present context' (Brannen and Nilsen, 2007: 155). Thus, in researching social actors' plans, hopes and aspirations one needs to be mindful of the fluidity and uncertainty of time horizons. As pointed out by Brannen and Nilsen (2007:155), 'time horizons should be discussed with reference to present activity and context and not merely as an isolated variable' which can be measured and quantified through survey methods. Expected duration of stay, as expressed at the outset of a migration journey may be an unreliable indication of how long migrants will actually stay in the destination society (Ryan, 2015). The time horizons of migration plans can change enormously as migrants' experiences, expectations, relationships and responsibilities evolve through the

life course. Hence, as discussed in the case study sections later on, we need research methods that are adequate to capture this kind of dynamism.

While QLR implies a longitudinal research design from the onset, O'Reilly (2012) – with specific regard to migration research – argues that more flexible and pragmatic approaches can also allow researchers to successfully capture the dimension of time in a highly reflexive way. The specific ethnographic practice of 're-study' – 'ongoing relationships with the field, characterised by return visits' (O'Reilly, 2012:519) has a long history in migration studies, though usually it is not explicitly labelled longitudinal. O'Reilly, for example, in her study of British migrants to Spain, started from an initial piece of qualitative research, entailing interviews and observations, subsequently adding a quantitative survey, which was analysed reflexively, informed by regular communication with the participants.

The case studies presented in this paper also acknowledge the 'recursive nature' of social science and the importance of being open and reflexive about it. The researcher's journey over a number of years, returning to the field and re-approaching the participants sometimes with new, complementary research tools, requires specific attention to capture change at different levels.

As will be discussed through our case studies, the multi-dimensionality of temporality has implications for mixed research methods as the qualitative and quantitative elements of data collection may be formulating and capturing different notions of time (Brannen and Nilsen, 2007). Specifically, the next section discusses the challenges and – at the same time – the importance of incorporating temporality when analysing social networks, and particularly migrants' networks.

3. Longitudinal social network analysis

There has long been awareness among some scholars that social relationships change over time. As observed by Snijders (2005: 216): 'The idea of regarding the dynamics of social phenomena as being the result of a continuous time-process, even though observations are made at discrete time points, was already proposed by Coleman (1961)'. Moreover, Coleman's concept of appropriability (1990) suggests that the nature of a tie and the resources flowing through that tie are not fixed but rather can be transformed. As Bidart and Lavenu (2005: 360) note, 'personal networks have a history. The form and structure they show today result from a construction elaborated over time'.

Nonetheless, as mentioned earlier on, capturing time remains a challenge in network research. It has been argued that there is too much focus on the consequences of network properties, i.e. outcomes, and insufficient attention on their antecedents (Scott, 2011; Borgatti et al., 2014). Thus, SNA can involve static assumptions, such as that centrality values are fixed at a moment in time, or ignore that actors may seek out new ties over time (Borgatti et al., 2014). Attempts to capture networks and represent them through visualisation, such as sociograms, have resulted in mapping a single 'snap shot in time' (Conway, 2014: 111). However, as we discuss in later sections, visualisation can be adapted to address temporal dynamism.

A related limitation of much empirical research (including SNA) is that it engages with longitudinal analysis through 'interpolation between snapshots', i.e. assuming a linear change between two points, without acknowledging that change is neither one-dimensional nor linear. Indeed, up until the 1990s, social network studies incorporating a longitudinal dimension were quite sporadic (Snijders, 2011) – despite some notable exceptions, e.g. Coleman (1961), Hallinan (1979), Bauman and Chenoweth (1984).

Longitudinal approaches became more common with the wider availability of (relational) panel data and, crucially, with the recent, rapid developments in software tools and computer models, e.g. RSIENA and TERGMs (Krivitsky and Handcock, 2014). This has led to a new field of 'longitudinal social network analysis techniques' (Liesbeth et al., 2012: 456), largely software driven. For authors like Borgatti et al. (2014: 21), there is a clear assumption that the way to understand dynamic relationships is through technological advancements. These approaches, however, may raise some scepticism. Scott sounds a cautious note: 'it would be a disaster' if new technological capabilities caused a return to descriptive SNA lacking in theoretical rigour Scott (2011: 25). Instead, he argues for a continued development in an analytical focus where data are used to test social theories and for further explanatory aims.

Furthermore, discussing their study of Argentinean migrants in Spain, Lubbers et al. (2010: 91) point out that while descriptions of structural change over time may give an insight into dynamic processes, these do not reveal the micro, dyadic processes (between alters), underlying wider, aggregate results. Rather than focusing on the 'existence of ties', more attention is needed to the content of ties (Lubbers et al., 2010: 93). As Crossley (2010) notes, social networks involve a world of feelings, relationships, attractions, dependencies, which cannot be simply reduced to mathematical equations. As Ryan argued (2011), analysing the 'social' aspects of networks requires consideration not only of the relative social location of alters, and the flow of resources, but also the meaning and impact of these personal relations. Migrants' networks shape and are shaped by cultural identities (e.g. Tacoli, 1999; Curran and Saguy, 2001; McKeown, 2001), and affect and are affected by broader social and economic dynamics in the countries of origin (e.g. Conway and Potter, 2007), destination and transit (e.g. Koser Akcapar, 2010).

Some have argued that qualitative methods are under-utilised and indeed under-valued by social network analysts (Heath et al., 2009). The cultural turn in network research has created more opportunities for qualitative approaches to understanding the construction and meaning of inter-personal ties (Knox et al., 2006). Innovations in qualitative social network analysis (so-called QSNA, see Herz et al., 2014) attempt to bring insights from qualitative data analysis such as grounded theory to inform structural network relationships. However, some qualitative network research is criticised for relying on descriptions and narratives (Crossley and Edwards, 2016), overlooking the wider structural dimensions of social relationships. Indeed, Ryan et al. (2015) noted that although migration studies have widely adopted the concept of social networks, this has often been employed by qualitative researchers in a loose way, without engaging with concepts and tools of SNA.

Rather than setting up a quantitative versus qualitative dichotomy, it is useful to explore how mixing methods may provide tools not only to measure the extent, but also to explore the reasons for change through time and space. Furthermore, in our own research (D'Angelo and Ryan, 2015, Tubaro et al., forthcoming), we found that a mixed methods approach to SNA can be helpful in addressing temporality. In the following section we explore these aspects and consider how mixed techniques, supported by visualisations, may provide important insights into dynamic social relationships.

4. The need for mixed-methods and visualisation

We contend not only that mixed methods provide useful insights into social networks but also that visualisation can play a key role in facilitating mixed approaches to data collection and analysis. In her comprehensive review of 'Mixed Method Approaches to Social Network Analysis', Edwards (2010) argues that SNA represents a specific opportunity to mix methods because

of its history as an interdisciplinary field developed from sociometry and graph theory (Moreno, 1934) and from early ethnographic studies of the structures of personal relations (Barnes, 1954; Bott, 1957). Of course, on the one hand, mixing any kinds of methods and techniques raises epistemological challenges (Fielding, 2010) and may cause paradigmatic tensions (Onwuebuzie and Leech, 2005). On the other hand, we share the view of Crossley and Edwards (2016) that a strong argument for mixing methods arises from an ontological premise, i.e. that "social worlds outstrip the sociological gaze"; they are more complex than any single epistemological perspective can capture. Thus, sociologists "can achieve both a more comprehensive and a more robust perspective by combining the vantage points that different methods afford". Specifically, the use of mixed-methods in SNA provides a more comprehensive tool-box for understanding 'the relational condition of human life' (Dominguez and Hollstein, 2014) and can allow the researcher to reconcile the structure of a network with its content and meaning. In some cases – as argued by D'Angelo (2015) – this can produce a better reflection of the inherent nature of social networks and, in this sense, addresses a specific ontological position regarding social relations.

Although 'mixed-methods' often are presented as being just about mixing quantitative and qualitative methods; from our experience they can also entail mixing different quantitative methods or different qualitative methods (see the work of Ryan below), particularly mixing 'verbal' research methods with visual ones.

Indeed visualisation can be integrated with a range of other methods, both quantitative and qualitative, to facilitate data collection, inform analysis and illustrate results (Tubaro et al., 2016). In so doing, visualisation can be used to bring methods into dialogue with each other, not necessarily to produce agreement but also to show tensions and discrepancies between data derived through different methods (see D'Angelo below) and thus provide new insights for further analysis. Visualisation has been described as a means of making invisible social relationships visible (Conway, 2014), making abstract concepts more tangible. For example, sociograms offer a structured, integrated view of relationships that would not be immediately perceivable just from narratives (qualitative analysis) or tables (quantitative analysis).

As we demonstrate in sections below, sociograms allow both the participant and the researcher to think in terms of social structures, explore network narratives as they emerge and investigate the relations between networks and mobility (Kahn and Antonucci, 1980; Scheibelhofer, 2011). Visuals can also be used as a key tool in longitudinal research, to reflect on memories and perceptions of changing relationships through time (Lubbers et al., 2010). Thus, as argued by Tubaro et al., 2016: 'visualisation has a decisive role to play in mixed-methods social networks studies, over and above its contribution, already acknowledged, to quantitative research'.

Nonetheless, as we discuss in following sections, sociograms should not be seen as a 'map', a visual representation of an objective reality, but as a 'visual narrative'. As Hogan et al. (2007) observed, when dealing with personal networks the respondent is the only informant on this network. This may raise concerns on the reliability of the responses, in other words 'we are left to the mercy of a respondent's cognitive biases' (Hogan et al., 2007:210). However, this should not inhibit this kind of empirical research, but rather lead to recognition that recalled networks are cognitive networks, establishing a clear theoretical link between the questions asked and the meaning of data thus collected.

Hence, we argue that visual images are never self-sufficient and work best when mixed with other sources of data, such as interview narratives or tables, to create incessant dialogue and reflection. Thus, it is important to include reflexivity as part of the mixed methods approach to ensure that researchers, as well as participants, have an opportunity to think about how different methods give rise to different kinds of data and are open to various interpretations. We maintain that reflexivity is crucial to enhancing research rigour and acknowledging limitations and challenges at each stage of the process from data collection through to analysis and presentation of findings (Ryan et al., 2014). Adopting a reflexive approach, in the following sections, we consider these issues in our own use of visualisation in researching network dynamism.

5. Our case studies: visualising migrant networks

Before presenting our data we first, briefly, describe the separate research studies carried out by Ryan and D'Angelo.

5.1. Exploring the personal networks of Polish migrants to the UK

Louise Ryan has been researching Polish migrants in London for over a decade (Ryan et al., 2008). During that time several different but related studies have been undertaken. Although these studies were not originally designed as longitudinal, following O'Reilly (2012), these could be described as 'return visits' to the field. While networks formed a primary focus of this on-going research, sociograms were only introduced in the most recent study (Ryan, 2016). Hence, while it is possible to compare interview narratives of those participants who were interviewed on repeated occasions over several years, it is not possible to compare network visualisation data. Nonetheless, the participants' descriptions and explanations about how their networks changed since the first interview are particularly illuminating.

A key aim of the most recent study was to examine evolving decision making processes about duration of migration and gradual extension of the stay over time (Ryan, 2015a). In particular, the study aimed to understand how inter-personal relationships both informed and reflected the unfolding migration trajectory. Thus, interview questions focused on network composition, structure and meaning and how these evolved over time as the stay abroad extended.

In an effort to collect richer data on changing social relationships over time, the study used a combination of interviews and paper sociograms. Although sociograms have usually been used to present data findings, an alternative use of sociograms in data collection uses real-time, rather than *ex-post*, visualization by asking respondents to directly draw a network, freely or in some pre-defined framework. As discussed at length in the literature (Gamper et al., 2012), there are many different ways of using sociograms, ranging from highly structured approaches that collect quantitative data from large numbers of participants, to qualitative approaches that elicit detailed explorations of meanings of specific social relationships. Coming from an epistemological position rooted in interpretative sociology and social constructionism, Ryan wanted to understand how networks are co-constructed in interview encounters and particularly in the process of populating the sociogram – not simply in the finished image as a piece of data. Using visual, as well as narrative, techniques allows different stories to be told suggesting the complexity and multi-dimensionality, as well as the fluidity, of social relationships.

The paper-based sociogram Ryan used consisted of 3 concentric circles divided into 4 quadrants (friends, family, work, neighbours/hobbies/other) and was adapted from Mary Northway's original 1940s target sociogram (further modified by Kahn and Antonucci, 1980 and Hersberger 2003). Given advances in computer aided visualisation (Gamper et al., 2012), it may be tempting to suggest that traditional pencil drawings of ego networks are obsolete. However, some researchers continue to use these simple visual tools partly because they have the distinct advantage of being completed by the participants during the interview – rather than

post-hoc in a computer lab (Hogan et al., 2007; Herz et al., 2014; Ryan et al., 2014). Clearly, the sociogram is not a neutral tool for capturing a pre-existing network, rather the design of the instrument and the questions asked by the researcher shape how social ties are visualised and explained (Ryan et al., 2014).

Interviews lasted approximately one hour. The sociogram, introduced after about 15 min, took participants approximately 15–20 min to complete – interspersed with discussion. The participants were told that the concentric circles represented degrees of closeness, with the closest or most important people nearer the centre and the less important/less close in outer circles. Participants were invited to write down the geographical location of alters so that links between emotional and geographical closeness could be explored. This was not an attempt to measure their ties but rather to understand how they represented their relationships both visually and orally.

The sociogram was not intended as a standalone instrument. Meanings of ties, how they changed over time, their relative importance, only made sense through discussions taking place in the interview. Ryan conducted an integrated narrative analysis of each complete interview transcript and sociogram, focusing on how a participant tells their story in words and images. Just as visual and narrative data are collected together, there is a strong rationale for analysing them together through an integrated method. This analysis thus captures the dynamic interplay between how people talk about and visualise their social ties (Ryan et al., 2014). Analysing sociograms and interview transcripts together reveals the 'dynamic interplay between the visual and narrative data' (Tubaro et al., 2016: 4). The material act of visual representation provoked discussion about the nature of particular relationships (Ryan et al., 2014). The visual tool prompted memories and stories, countering forgetfulness, and adding more alters to the network than achieved by interviewing alone (McCarty et al., 2007). In addition, as discussed in the next section, visualisation raised questions about the ranking of alters as participants promoted and demoted friends and family relative to each other (Hogan et al., 2007).

5.2. Mapping the whole-network of Kurdish community organisations in London

The research work conducted by Alessio D'Angelo started in 2008, with the aim of mapping and analysing the social networks and networking practices among Kurdish community organisations in London.

These organisations, defined as not-for-profit, migrant-led organisations provide support to the very diverse local Kurdish population included advice centres, service providers and cultural associations. One of the research aims was to investigate the extent to which organisational networks allowed individual users to benefit from enhanced social capital and whether, at the same time, these ended up constituting a sort of 'organisational social capital enhancing the capability of individual organisations (for a further discussion see D'Angelo, 2015).

D'Angelo's long term research started with the adoption of quantitative data collection tools, typical of more 'formal' approaches to SNA, such as identification of ties on the basis of official records and the use of structured questionnaires, including a lists of all Kurdish organisations in London from which respondents had to select their alters with regard to different types of relationships. However, this approach was gradually integrated with interpretivist methods such as semi-structured and unstructured interviews and participatory observations. Thus, in later stages of work, the research framework became increasingly 'mixed-methods' and produced a wealth of data sometimes in apparent contradiction with each other. The fact that the research took place over a period of more than five years, with repeated

interviews, observations and participation in community events allowed D'Angelo to get embedded into the network, whilst maintaining his role of external observer (O'Reilly, 2012)

Within this context, the process of visualising the whole network assumed a very particular role. Sociograms did not aim to get an objective representation of a social reality. Rather, D'Angelo sought to produce descriptive outputs, informed by his understanding of networking processes and structures, and attempting to summarise a set of relations as experienced 'from within' – thus an intrinsically interpretivist exercise. The development of these charts encompassed an iterative process, where the structural patterns presented in preliminary sociograms informed questions about their content and meaning, and with the results of qualitative methods being used to interpret, but also to enhance and amend the visualisations. After each phase of data collection and preliminary analysis, D'Angelo drew a chart (with the aid of the free social network analytical software Pajek – Nooy et al., 2005) summarising the main ties between organisations as informed by that particular set of data. By looking at different sociograms side by side, he aimed to identify similarities and contradictions and make sense of them. In other words, the sociogram was not used simply as a research output, but as an analytical took to triangulate and reconcile different types of data.

In these themes are further developed in the following section.

6. Beyond the snapshot: sociograms as a (time) a narrative

In this part of the paper we discuss not only how we use mixed methods to collect data on social relationships but also how we analyse these data to gain deeper understandings of dynamics through time and space.

6.1. The meaning of change in Polish migrants' networks

In the case of Author Ryan repeat interviews, it is possible to explore relational dynamics over time. While family ties in Poland remained strong as key sources of emotional support, Polish-based friendship networks seemed to weaken during the interval between interviews. During the first interview in 2006 Agnieszka said: 'friendships from secondary school are the strongest ones and I am in frequent contact with people from Poland, my friendships are there'. At that time she had already been in London for several years but she remained firmly connected to networks of friends in Poland though frequent contact via e-mails and visits. During times of loneliness or uncertainty in London, her main sources of emotional support were friends and family in Poland.

When re-interviewed in 2014, Agnieszka continued to maintain strong ties with family in Poland, especially her parents, who featured at the centre of her sociogram. But the friendships from secondary school no longer featured as close ties in her narrative and were not included in her sociogram. When asked how her relationships with friends in Poland had changed she remarked: 'I'm not in good contact with them anymore'. She added that although she missed 'old good friends' in Poland, it proved difficult to sustain relationships and over time these have 'gradually weakened'.

A similar pattern was observed in the other repeat interviews (see also Bilecen and Sienkiewicz, 2015). Ewa's description of her friendship networks changed significantly through the repeat interviews, while her family ties in Poland remained strong. In her sociogram, her family appeared in the closest circle.

> When I went to Poland I used to spend time with friends but it became less and less regular and my time is quite short in Poland and you have to choose. There's my nephews, my nieces. We are very close. I definitely need to put them all in here (sociogram). Well, this is basically the centre of my life (Ewa).

Ewa's sociogram reflects the centrality of her family in Poland. As a busy working mother, she had limited time to invest in maintaining long distance ties and clearly prioritised family during her visits to Poland. There were no friends in Poland represented on her sociogram.

In describing network change over time, participants often discussed how they had changed and were no longer the person they used to be in Poland. Magda, arrived in Britain as a teenager in early 2000s, reflected how she had changed between the two interviews (2006 and 2014). She described shifting identity: 'I think I can identify myself more as being British than being Polish'. She explained that she feels like a 'tourist' when visiting Poland and no longer feels 'attached' to that country. Thus, changing composition of networks was not just about weakening connections due to separation through time and space, but also about shifting identifications. As sociograms were only included in the second round of data collection, the aim was not to 'measure' changing network composition, but rather to qualitatively explore how participants narrated and visualised relational changes and continuities. The act of visualising and narrating networks usually prompted justification of their changing self through time. Thus, we are not simply counting the number of ties in different places but rather trying to understand the dynamic meaning and intensity of those relationships through time and across spatial locations (Ryan, 2016).

While completing the sociogram, Angelika observed she had less in common with former friends in Poland: 'some of them, if they're very religious, they're just a bit brainwashed, like Catholics, in the way they think about certain things'. After a decade in London, 'where it's really liberal', Angelika was 'scared' by how right wing Poland had become. Similarly, Dominik reflected on change over time and how old friendships fractured: 'I recognised that we don't have much in common any longer. Because I am a different person than 11 years ago in Poland'. Thus the sociogram enabled participants to depict not just their networked self but also to reflect their changing self. Time is crucial to this story. As noted earlier, temporality is not simply neutral (McKie et al., 2002). Time is imbibed with meaning. The concept of timescapes (Adam, 2000), discussed earlier, is particularly relevant here to make sense of change across various scales ranging from micro (personal), meso (relational) and macro (wider socio-structural context). The passage of time is understood through personal changes (*I am a different person*), but also how friendship ties have changed against the backdrop of migrant transitions from Polish to British society (spatially and socially). We return to contextual change in a later section.

Oliwia did not include any friends in Poland in her sociogram: 'we didn't understand each other anymore, and I just thought, I just felt guilty that I have this life here. . . I was studying and travelling, so. But it was really hard to explain to them. . .' (Fig. 3). As Moreno observed: 'the sociogram is more than merely a method of representation. It is first of all a method of exploration' (1953:96). Embedding the sociogram in in-depth interviews enabled participants and researcher to discuss network composition; exploring why and how relations changed over time. For Oliwia, the growing gulf between her and her former friends in Poland reflected her feelings towards Poland more generally. Echoing a point made by Magda above, Oliwia remarked: 'at the same time I kind of was becoming myself disconnected with Polish reality.'

Combining the visual tool with the in-depth interview made visible the process of network construction. Participants talked as they completed the sociogram; articulating the decision making process about where to place alters: 'I've got one kind of colleague that I would put maybe even here, maybe a bit further, or maybe, no, actually maybe on the border' (Sylwia). 'Talk around the sociogram' was a crucial aspect of the data and underlines the significance of the researcher's presence during this part of fieldwork (Ryan et al., 2014). Participants offered explanations about particular rela-

tionships and overall composition of their network. Looking at the sociogram, Ryan observed that most of Izabela's close friends were male. Izabela explained that as an only child who grew up surrounded by male cousins, she was more comfortable around male friends. Through these explanations participants opened up new lines of discussion, facilitating deeper probing of issues that may otherwise have remained obscure. By requiring participants to rank friends and family members within concentric circles, rather than simply listing names of alters, the sociogram prompted discussions about the relative closeness of particular ties. Participants often promoted or demoted friends (Hogan et al., 2007). Karina actually used the word 'relegate' as she erased and re-located friends on her sociogram: 'actually I can relegate Anika goes here and the other A will now stand for another Anya who now lives in Australia'. Karina went to explain that Anika was relegated because she was not as reliable a friend as Anya, although the latter lived much further away.

6.2. Kurdish organisations: reconciling multiple representations of change

Analysis of network data as a narrative presents additional challenges when applied to whole-network research, and particularly to mapping and visualising whole networks through sociograms. Indeed, the idea of 'whole-networks' is largely associated with systematic, structured collection of data and, as such, perceived as intrinsically positivistic: ties are either there or not (Crossley, 2010). However, in some instances, establishing the presence of ties as clear-cut and a priori can been particularly challenging (D'Angelo, 2015) and risk overlooking personal dimensions of ties and different ways in which the same relationship can be perceived, used or presented by different actors within a network. This creates a specific epistemological problem since, by definition, 'whole networks' – unlike ego-networks – should not be based around the views of one or a few actors, but rather present the network in its entirety. Authors such as Crossley and Edwards (2016) show how much more qualitative – and nuanced – approaches to whole-network analysis are possible, for example using data emerging from diaries or participatory observations. In this respect, the use of qualitative approaches – or mixing quantitative and qualitative approaches – can help reconcile the structure of the whole-network with the perspectives of individual actors (nodes).

The issue of the 'presentation of the networked-self' when mapping whole-networks emerged quite clearly in D'Angelo's work on Kurdish community organisations in London. In early stages of fieldwork, the structured questionnaire administered to community officers generated several non-reciprocated ties, i.e. respondents would report collaboration with some other organisation which, in their answers, did not confirm such links. Semi-structured interviews with community officers showed how such discrepancies often were reflections of well-rehearsed narratives, typical of a community sector where funding can be secured only when specific organisational networks can be demonstrated (D'Angelo, 2015). Thus, some community officers would automatically tick all the boxes of the questionnaire, to indicate they had working relationship with 'everybody – an approach later confirmed in the interviews. The idea was to make clear their organisations were well-connected, and able to work with and on behalf of 'the whole community. Moreover, smaller organisations were keener to present themselves as connected to bigger ones than vice-versa.

In this research, it was deliberate not to ask respondents to draw their overall view of the network of organisations. Among other things, this was an attempt to limit a mere 'representation' of it. However, at a later stage of the study, a selection of participants were shown some of the sociograms produced by D'Angelo, 2015
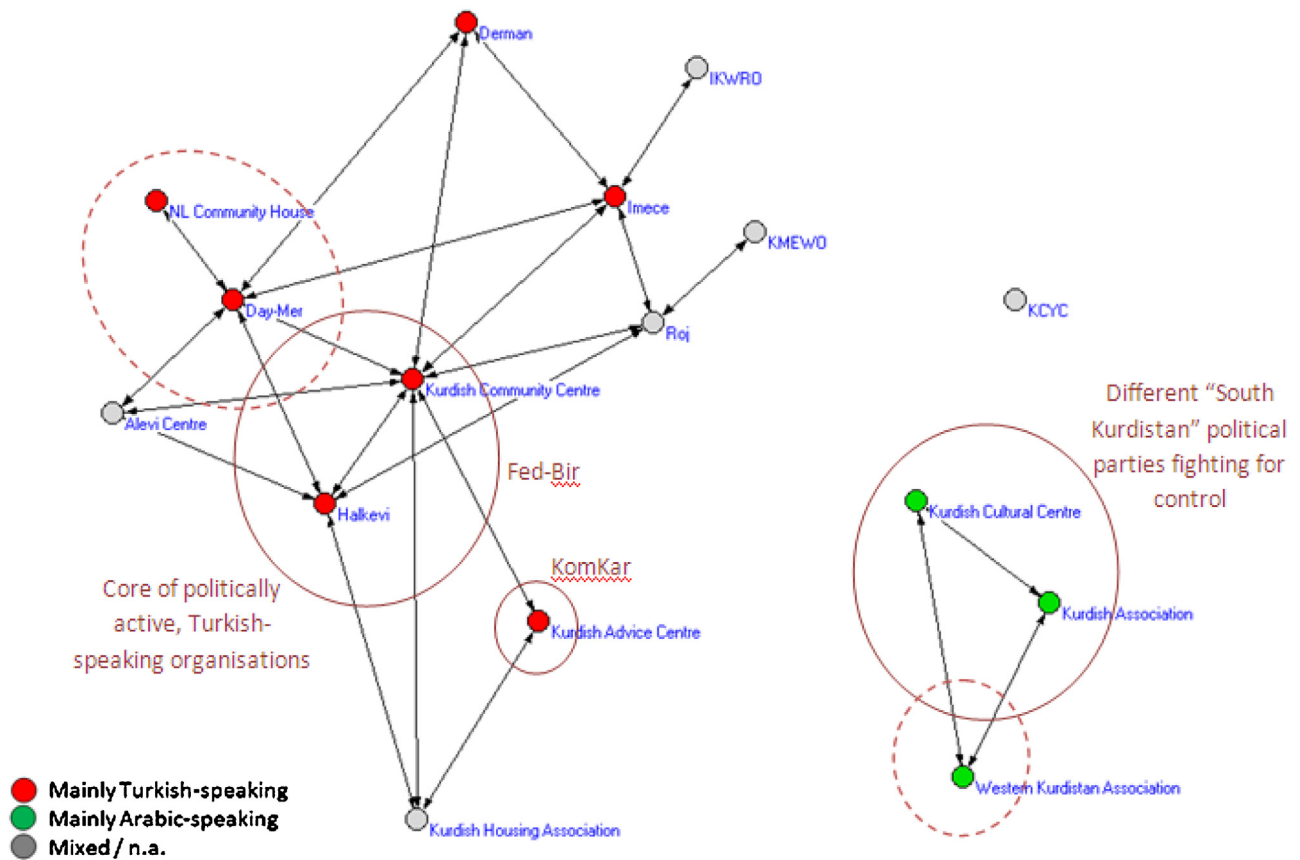
Fig. 1. Sub-networks: linguistic groups and political affiliations.

on the basis of his mixed-methods analysis – an example of these in Fig. 1 – and were encouraged to comment on them. The visual image of the network prompted self-reflection. In many instances, the first reaction was to look for the location of one's organisation, to then check which other groups were linked to it. It was rare for respondents to reject the sociograms as inaccurate or 'wrong'; however in many cases there was an urgency to 'justify' the network's structure, for example why certain nodes appeared to be disconnected from most others. Interestingly, some comments referred to the transient nature of ties (Gilchrist, 2004), distinguishing between long-term, 'strategic' connections on the one hand and short-term, shifting and somewhat 'tactical' connections on the other.

Hogan et al. observed how asking a participant to look at a representation of their social network would engage them and elicit personal insights. 'Respondents routinely comment on how interesting their personal network look and how they never considered it in such a fashion' Hogan et al. (2007:137). It can be argued this is true for both ego-networks and whole-network visualisation. Indeed, looking at one's position in a whole network may challenge and stimulate respondents even more, forcing them not to think about themselves as the centre of their own social space but considering their relative position within a larger social structure.

In D'Angelo's study, the feedback received by respondents was used to further revise the sociogram, in an iterative process of analysis and re-interpretation. This approach takes us back to the very early days of social network analysis. In the pioneering work of Moreno (1934), Moreno (1953), sociograms were used to visualise social networks as emerged through data collection. However Moreno warned that 'the responses received in the course of sociometric procedure from each individual, however spontaneous and essential they may appear, are materials only and not yet sociometric facts in themselves. We have first to visualize and represent

how these responses hang together' (Moreno 1978:95). This raises wider questions about how we can interpret and make sense of data pertaining to change over time.

7. The role of contextual factors in driving change

As argued by Crossley (2011:1), choosing 'networks of social relations and interactions between actors' as the main unit of analysis allows the researcher to bridge the personal and the collective, going beyond the traditional dichotomy between 'individualist' and 'holistic' approaches to empirical sociology. Thus, SNA – and more broadly Relational Sociology (Emirbayer, 1997) – can, at least in theory, (re)connect micro, meso and macro dimensions into one analytical framework. However, by focusing on a set of directly linked actors contained by more or less defined network boundaries, many SNA studies risk cutting out the macro level. Even 'big data' SNA often appears as analysis of 'big meso', rather than really looking at the macro, i.e. contextual, level. The temporal dimension, in particular, is often explained in terms of changes occurring to actors or between actors; a by-product of their characteristics and internal dynamics.

There is, however, a need to pay much more attention to the role of external factors – including the opportunity structures for networking (D'Angelo, 2015; Ryan et al., 2014). Hollstein (2011), for example, noted the importance of focusing not only on fluctuations in networks over time but also on the contextualisation of networks in changing physical spaces – with the two elements being strictly connected. But there is more. The network structures and practices of individuals are often affected by changes in the social, economic and political context around them. Legislative frameworks may also have an impact. As far as migrants are concerned, for exam-
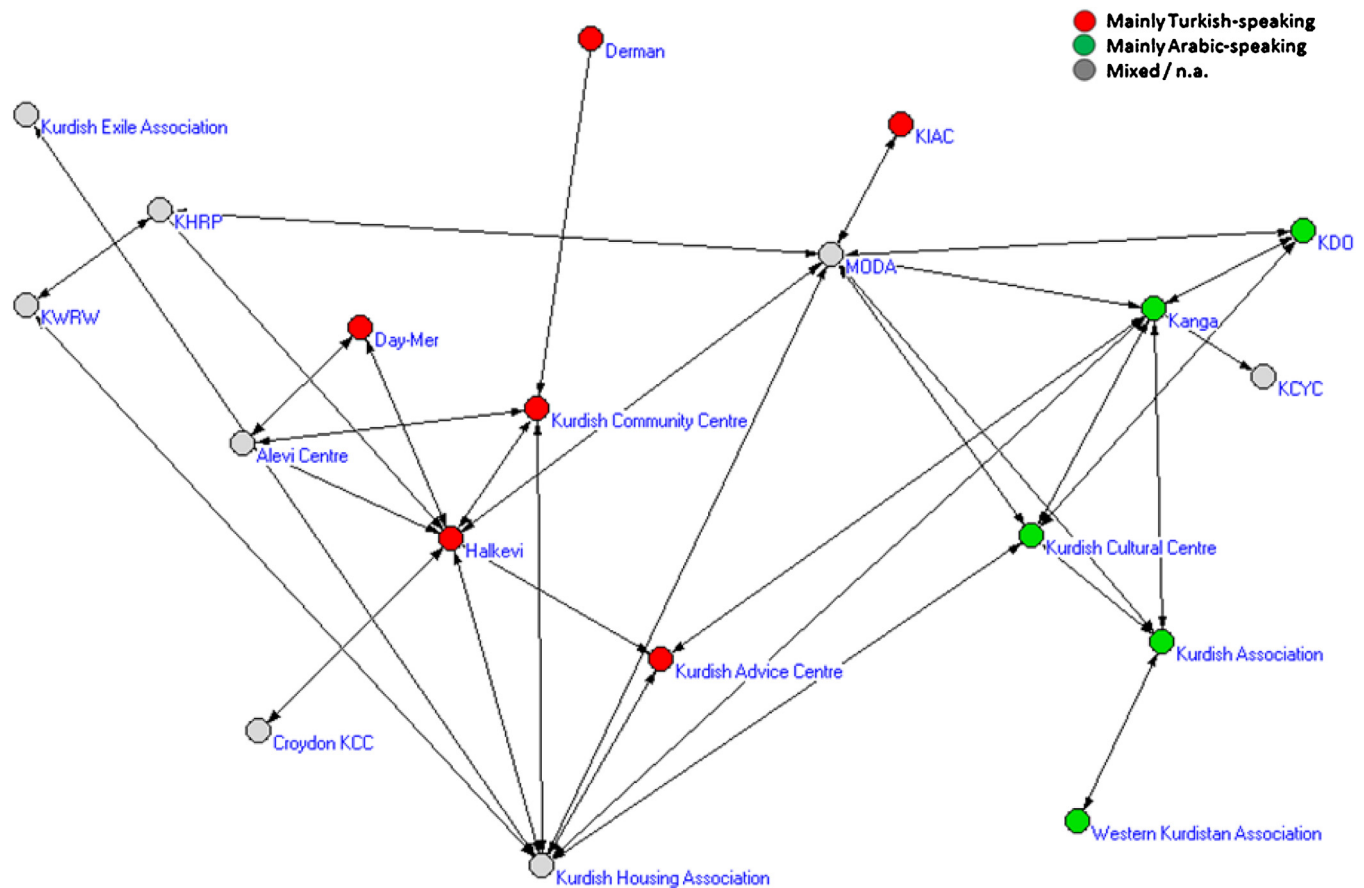
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Fig. 2. Social network of Kurdish organisations in London (circa 2006–2007).

ple, changing legislation on mobility rights can affect the ability to maintain and act upon transnational ties.

7.1. Changing Polish networks in a changing Europe

A typical case is that of Eastern European migrants: the EU enlargements of 2004 and 2007 suddenly made movements much easier, increasing migration flows and, crucially, enabling migrant communities across the EU to develop much more flexible and dynamics transnational practices with regard to professional and family life (Ryan et al., 2009). Such a multilevel approach to social network analysis chimes with the previously discussed concept of timescapes (Adam 2000) as an interaction between micro, meso and macro dimensions of time and reinforces Snijders (2005) argument that looking at networks over time is the most effective – almost natural – way to explain their structures.

While the numbers of migrants moving from Poland to Britain following EU accession in 2004 was enormous and largely unanticipated by policy makers (Ryan et al., 2008), this was not the first wave of Polish migrants. In the post-war period many thousands of Polish exile made their home in Britain (Burrell, 2006). This earlier settlement created a whole network of Polish churches, Saturday schools and cultural organisations across the country. Nonetheless, as Ryan noted (2015b), the relationship between these older Polish networks and more recently arrived post-accession migrants was complex and sometimes tense. Divided by age, socio-cultural experience and by class, these waves of migrants often had little in common (Ryan, 2015b). Thus, the existence of an established whole network is not necessarily a good indication of how more recently arrived migrants will engage and participate in these pre-existing structures.

Another important temporal and contextual observation from Author Ryan's research relates to the EU itself. While the enlargement of the EU formed the crucial context to her initial research in the mid-2000s, recent 're-visits' to the field were framed by political debates about Britain's future in the EU – 'Brexit'. Many Polish migrants expressed concerns about their future as Britain voted to leave the EU. Much to the surprise of Ryan, one way in which interviewees sought to assuage such concerns was by applying for British citizenship. One participant, Oliwia, sent a link to her facebook page which featured a photo of Oliwia proudly holding her newly acquired British passport.

7.2. Kurdish organisations at the intersection of political and community dynamics

These wider contextual aspects are equally, if not more, important when analysing organisational networks, for example networks of migrant community organisations. The development and the activities of these organisations – including their networking practices – have often been interpreted as a reflection of the specific cultural and socio-economic identity of different migrant populations and on their 'natural' tendency to collaborate on the basis on inter-ethnic ties (Cheetham, 1985; McLeod et al., 2001). More recently, however, attention has been drawn to the importance of other, contextual factors, most notably the opportunity structure in the host society (Schrover and Vermeulen, 2005).

The work conducted by D'Angelo highlighted how, in order to explore the networking dynamics among Kurdish organisations in London, it was not possible to ignore the specific history of Kurdish people, both internationally and within the local London context, their multi-faceted identities and their changing charac-
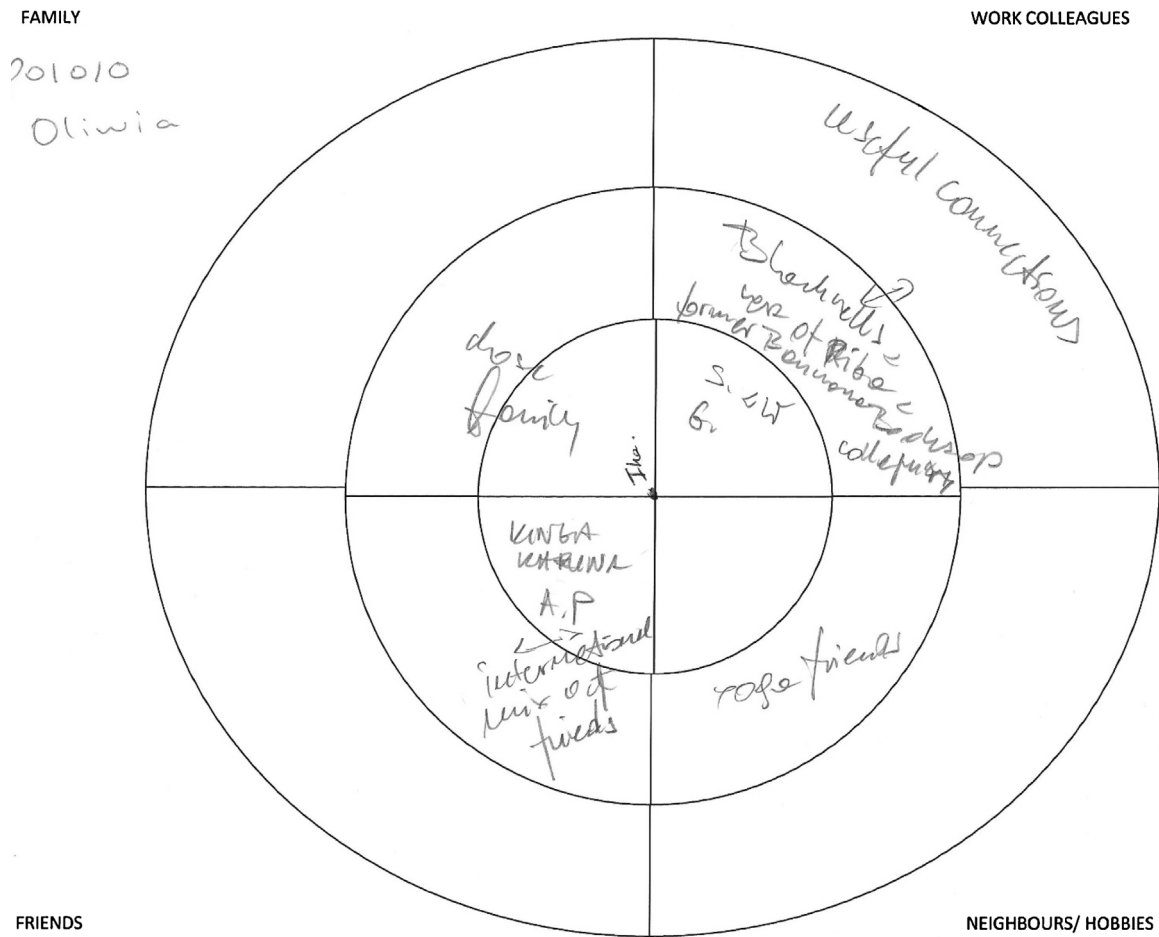
Fig. 3. Oliwia's hand drawn sociogram.

teristics. At the same time, the development of Kurdish (as well as other) migrant organisations has been driven by a number of changes in the UK policy context, including the progressive 'marketisation' of the third sector and the shift from multiculturalism to social cohesion in the discourses and approaches of local and national policymakers (Craig, 2011; D'Angelo, 2015). The strong views of different community activists and the importance of networking in third sector practices also affected the way in which community-level social networks are perceived, acted upon and, crucially, communicated to external observers, with considerable epistemological implications (D'Angelo, 2015). Changing ties have also been a reflection of staff turnover, individuals moving from one organisation to the other as well as key officers leaving the sector – or the country – altogether.

Also in this case, the data gathered through official data sources and 'formal' SNA instruments, were often very different from those emerging from participatory observation and when talking more or less informally with active community members. The tensions thus uncovered were a reflection of the complex interplay between formal and informal levels which characterise these organisations (D'Angelo, 2015) and that underpinned processes of long and short term change. Thus, it was important to triangulate different sources of information and different types of data, using the sociograms as an overall synthesis of these complexities.

The sociogram presented earlier on (Fig. 1) is an attempt to summarise key links between the major players in the Kurdish organisations network, approximately in the period 2011–2013. However, the face of the 'Kurdish community' has changed constantly over the years. When D'Angelo conducted his first exploratory study of Kurdish organisations in London (D'Angelo, 2008), their number, characteristics, and, crucially, the interactions between them were significantly different. Fig. 2 summarises the network as it was around 2006–2007. The picture would have been even more different over the previous two decades, as suggested by interviews with some of the older activists.

As discussed earlier on, the changes that occurred between these two points in time were anything but linear. As argued by Borgatti et al. (2014), actors are constantly seeking out new ties, and changing the nature of existing ones. What emerged clearly from the fieldwork – particularly from long-term observations and repeated interviews – is the fact that ties between organisations can change very rapidly and on an ad-hoc, short term basis. Although some strong affiliations tend to be maintained over the years, many interviewees revealed how ties could be established or truncated at short notice. For instance, new alliances could be made in the face of a major issue emerging in the community. (Key examples included a raise in gang culture among young members of the community in the mid-2000s, and the 2011 'London Riots'). In other cases, new – often short-term – links were established to participate in joint funding applications, or to respond to consultation initiatives from local or national public bodies. Conversely, groups who have been traditionally working together could suddenly find themselves involved in two competing funding applications.

Even when looking at a sociogram as a snapshot, many organisational links (or lack of them) can only be understood in relation to the history of each group and each individual operating within it. Also with regard to this important point – which will require further discussion elsewhere – the aim of sociograms developed

through this mixed-methods approach was not to generate an exhaustive and 'final' map of all types of ties existing between individual organisations, but rather to provide an overview of selected, specific connections, addressing particular research questions and informing further reflection and investigation.

Nonetheless, it is possible to identify a number of overall trends and dynamics, related to a broad range of external factors, which effected the pattern of this Kurdish network over the years. Firstly, an increasingly competitive funding regime forced many organisations to close down between the mid-2000s and the mid-2010s – and thus disappear from the network. At the same time some new organisations were established, reflecting a changing population, and with an increasingly significant role being played by second generation migrants and by women groups in particular. This is a clear example of the generational (meso) dimension of change in these social structures (Adam, 2000).

Meanwhile, the ties between 'Turkish-speaking' and 'Arabic-speaking' organisations have progressively disappeared (as it clearly appears from a comparison between Figs. 1 and 2). This process was, at least in part, due to external, indeed international factors. Notably, the strengthening of the Kurdish Regional Government in northern Iraq reduced the commonalities in the political struggles between Kurds from Iraq and those from Turkey. Moreover, many important community activists and 'leaders', including some of the coordinators of long-established London organisations, decided to move back to Iraq to help with the post-conflict reconstruction and to take up new, highly-skilled job opportunities. In several cases their absence led to the collapse of their organisation or severing of existing organisational ties. Again, to paraphrase Adam (2000) the changes occurring within the network of Kurdish organisations are clearly at the intersection of historical and biographical dimensions.

More generally, the high degree of national and international political engagement of individual community activists had a major impact on the life of individual organisations (Wahlbeck, 1998). Over the years, some key community members, would sometimes leave the UK for relatively long periods of time to do campaigning or to run as candidates for local and national elections in the areas of origin. For the organisation, this could mean operating with no proper coordination or even stopping most activities for several weeks – the future of the organisation – and of its ability to play a role in the broader Kurdish network – dependent on electoral results.

As these examples clearly illustrate, the contextual dimension can help explain changes in the very nature of network ties. By triangulating the structural (meso) dimension of networks with, on the one hand, the more personal level and, on the other, the broader societal and political context, mixed-methods research frameworks represent an invaluable instrument to go beyond the simplistic assumptions of some actor-based models Prell (2012).

8. Conclusions

This paper has explored the relational dynamics of migrants' networks (whole and ego) through time and space. Researching dynamism may be particularly challenging in the case of migrants because they are moving across varied spatial contexts and negotiating relationships in multiple sites. However, this is not to suggest that time and space are neutral media within which things happen. In this paper, we have sought to go beyond a 'snapshot' of time as a collection of fixed points to show the complex and dynamic interplay of temporality, contextuality and relationality. In an attempt to 'take time seriously' (Adam, 2000), we have used the notion of timescapes, to explore micro (biographical), meso (relational) and

macro (structural) dimensions of time to show how individual and wider contextual lives interact dynamically.

This raises challenges about the methodological tools necessary to understand and study how migrant networks change over time. Like O'Reilly (2012), we did not plan longitudinal research from the outset. Migrants may be transient and move around a lot, thus it can be difficult to track them over time. Nonetheless, by continually re-visiting the field over more than a decade, we have managed to maintain some relationships and re-interview participants on several occasions.

Our work aims to contribute at the nexus between SNA and migration research. We argue that a longitudinal, multi-dimensional approach to SNA is not just desirable and advantageous, but that indeed it should stem directly from the very concept and nature of social networks. In this paper we have endeavoured to show how integrating a mixed methods approach to SNA with migration research can provide a useful methodological and analytical framework to understand temporal, spatial and relational dynamics. On this basis, we argue that different combinations of quantitative, qualitative and visual methods do not just offer richer sets of data and insights, but can allow us to better connect conceptualisations – and ontologies – of social networks with specific methodological frameworks.

Particularly, the integration of visualisations with other research techniques (qualitative or quantitative) can provide important insights into the dynamic meaning of social relationships. We suggest that sociograms offer a structured, integrated view of relationships that would not be immediately perceivable just from narratives (qualitative analysis) or tables (quantitative analysis). Nonetheless, a visual image is never self-sufficient and needs incessant reflexive dialogue with narratives, structural and contextual data to derive its meaning as a representation of specific relations and interactions (Tubaro et al., 2016).

The use of mixed methods of data collection and an integrated data analysis are useful not only in demonstrating how ties change over time (and space) but also why this change occurs. Furthermore, each tie is not an element whose existence can be explained 'per se', but is always dependent on the presence of other ties and to broader contextual elements. Mixed method approaches can enable an understanding of both network content and meaning within dynamic personal (micro), relational (meso) and wider (macro) structural contexts. In conclusion, we suggest that combinations of methods like those used in the case studies presented in this paper, do not just provide richer data, but allow us to sustain an epistemologically sound approach to social network analysis over time.

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